

**REMARKS****I. Introduction**

Applicants and Applicants' attorney would like to thank Examiner Pham for his time and assistance during the interview conducted on February 25, 2004 to discuss the pending rejections. As explained in further detail below, and discussed during the interview, Applicants have cancelled claims 1-38 without prejudice, and have made minor amendments to claim 39 so as to more clearly define the subject matter of the invention. In addition, new claims 51-56 have been added. All pending claims are believed to distinguish over the cited prior art for the reasons set forth below. No new matter has been added.

**II. The Rejection Of Claims 39-50 Under 35 U.S.C. § 102**

Claims 39-50 were rejected under 35 U.S.C. § 102 as being anticipated by USP No. 5,399,518 to Sim. For the following reasons, Applicants respectfully submit that claim 39 is patentable over Sim.

As discussed during the interview, claim 39 relates to a semiconductor device which includes in-part an insulating film formed over a semiconductor region, which has the property of reflowing due to a heat treatment; a silicon oxide film formed on the insulating film; and a silicon nitride film formed on the silicon oxide film; where the entire lower surface of the silicon oxide film is in contact with the upper surface of the insulating film. This structure is shown, for example, in Fig. 5 of the specification, wherein element 16 is the insulating film, element 17 is the silicon oxide film and element 18 is the silicon nitride film. Thus, in accordance with the claimed structure,

the silicon oxide layer is disposed between the insulating film and the silicon nitride film.

Turning to Sim, in the pending rejection it is asserted that film 42 of Sim includes both a silicon oxide film and a silicon nitride film which corresponds to the claimed silicon oxide film and silicon nitride film recited by claim 39. However, as explained during the interview, layer 42 of Sim does not comprise multiple layers, and as a result, Sim does not disclose an silicon oxide layer being formed between and insulating film and a silicon nitride film as recited by claim 39.

More specifically, referring to col. 6, lines 39-50, Sim states:

On planarization layer 22, two insulating materials whose etch rates are different from each other which respect to any etching, for example, an oxide such as an HTO and a nitride such as a silicon nitride ( $\text{Si}_3\text{N}_4$ ) are deposited in turn, ***thereby forming an etching stop layer 42, and first, second and third insulating layers 44, 46 and 48*** as first, second and spacing layer. Here, ***etching stop layer 42 is formed by depositing a nitride such as silicon nitride*** to a thickness of about 100 Å – 200Å. First insulating interlayer 44 is formed by depositing an oxide such as an HTO to a thickness of about 500 Å – 1000Å. Second insulating interlayer 46 is formed by depositing a nitride such as silicon nitride a thickness of about 500 Å – 1000Å. Third insulating interlayer 48 is formed by depositing an oxide such as an HTO to a thickness of about 500 Å – 1000Å.

Thus, as the foregoing passage makes clear, layer 42 of Sim is merely a silicon nitride layer, not a combination of silicon oxide layers and silicon nitride layers. The “depositing in turn” language refers to the formation of the etch stop layer, ***and*** the first, second and third insulating layers, not only the etch stop layer. As such, Sim discloses the silicon nitride layer 42 being deposited on the insulating layer, not a silicon oxide layer as recited by claim 39.

Accordingly, at a minimum, Sim does not disclose a silicon oxide film formed in contact with an insulating film, and between the insulating film and the silicon nitride

layer. Indeed, in contrast to the claimed invention, Sim discloses a silicon nitride film formed in contact with the insulating film.

Accordingly, as anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), and Sim fails to disclose at least the foregoing element of the present invention, it is clear that Sim does not anticipate claim 39, or any claim dependent thereon.

For the foregoing reasons, it is respectfully submitted that claim 39, and all claims dependent thereon, are patentable over Sim.

### III. New Claims 51-56

During the interview, the difference between new claims 51-56 were discussed. A brief summary of that discussion and why new independent claim 51 distinguishes over the prior art is set forth below. For at least the following reasons it is respectfully submitted that new claims 51-56 are patentable over the cited prior art references.

Sim fails to disclose that the silicon oxide film is formed on the insulating film, as recited by claim 51.

Lee fails to disclose that substantially the entire lower surface of the silicon oxide film is in contact with the upper surface of the insulating film. As shown in Lee, approximately one-half of the oxide film 135 covers the gate, while the other half contacts the insulating film 125.

Finally, similar to Sim, Lu discloses a capacitor dielectric layer 50 formed on a

silicon nitride barrier layer 32A, which is formed on an insulating layer 30A. Thus, in contrast to the claimed invention, Lu discloses a silicon nitride layer disposed between an insulating film and an oxide layer.

As such, it is respectfully submitted that none of the cited prior art discussed above discloses the Applicants' invention as recited by new claim 51.

IV. **All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987).

Accordingly, as claim 39 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

V. **Request For Notice Of Allowance**

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an

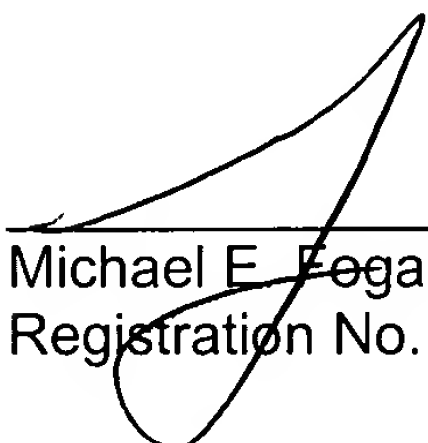
Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

Respectfully submitted,

McDERMOTT, WILL & EMERY

Date: 3/10/04

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